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ABSTRACT

This literature review examines the development and early language acquisition of infants with blindness or visual impairments. The paper begins with a history of public perceptions of individuals with visual disabilities, efforts to develop educational programs for them, and legislation supporting these efforts. Review of the literature on early development of infants with blindness or visual impairments discusses parent-child interaction, the language of the hands of blind children, play behavior, object permanence, motor development, and "blindisms"--i.e., specific behaviors that most blind children exhibit. A section on language development compares blind and visually impaired children with sighted children in terms of language acquisition. It compares the two groups' first words, understanding of the words "look" and "see," stereotypic speech, verbalisms, and literacy. The review then outlines common eye problems that cause learning problems and are often undetected. It examines the issues of least restrictive environment and mainstreaming. The final section offers guidelines for parents and for teachers working with students who are blind or visually impaired. (Contains 25 references.) (JDD)

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**The Blind
and
Visually Impaired
Child
A Brief Overview**

**by
Kristina B. Colcock**

**for
Dr. H. Lass
EDEL 695
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Introduction

Vision is the fastest and most efficient way to quickly perceive information about the environmental surroundings. In fact, approximately 90% of a sighted person's learning is through visual input (Ashcroft & Zambone - Ashley, 1980). What do we mean by using the term "vision"? Vision is the interpretation of the nerve stimuli that the brain receives from the optic nerve. The optic nerve is stimulated by the focusing of light by the lens, onto the retinal wall and the optic disk (Silverrain, 1987). Child development literature informs us that the child's maturation and skill development is couched in the child's ability to visually perceive the world around them (Hill, Dodson - Burk, & Smith, 1990; Dunlea, 1989; Scott, Jan, & Freeman, 1989; Santrock & Yussen, 1987 ; Landau & Gleitman, 1985; Fraiberg, 1977). Creeping emerges from a child reaching for an object that is beyond the child's grasp (Dunlea, 1989; Santrock & Yussen, 1987; Landau & Gleitman, 1985; Fraiberg, 1977). When the child is reaching for the object, the hand falls short and lands on the floor. With the arm in an extended position on the floor, the infant has leverage to scoot a tiny distance. This brings the object within reach of the infant, thus rewarding the effort. Through a series of failures and successes, the child begins to creep. This behavior is stimulated by the visual perception of an object that the infant desires to possess, but is out of reach.

When a newborn lifts the head , they are able to perceive a much larger portion of the surrounding environment (Dunlea, 1989; Scott, Jan, & Freeman, 1989; Fraiberg, 1977). This visual experience motivates the infant to repeat the movement and thus reestablish the visual experience, strengthen muscles, and promote exploration of the surrounding environment through vision (Scott, Jan, & Freeman, 1989 ; Santrock & Yussen, 1987). Again the behavior is stimulated by the child's visual perceptions. But , what is a blind child's motivation for exploration of the surrounding environment ?

What kind of world does a blind infant live in? Is it a black void only filled with sounds, smells, and textures ? Unfortunately, the facial expressions do not give the observer many clues to this mystery. Most of the time, the face and eyes of a blind infant are expressionless (Scott, Jan, & Freeman, 1989 ; Berger, 1987; Fraiberg, 1977). The expressionless eyes and face may give the person observing, the impression that the baby is disinterested, bored, or "not there" with the observer (Scott, Jan, & Freeman, 1989). How can a caregiver pick up on clues from a seemingly disinterested baby? Where can the clues be found?

This is a review of the available literature concerning the development and early language acquisition of the blind and visually impaired infant. After briefly reviewing the history, there will be a discussion of the general development of the blind infant. Then, a brief look at the effects of blindness and visual impairment on language development and acquisition.

It is important that the blind and visually impaired child who has been mainstreamed has a teacher who is comfortable with blindness and/or visual impairment. Experience or exposure to such students will help the teacher to better meet the needs of these children (Eichinger, Rizzo, & Sirotnik, 1991). This paper will offer some general guidelines and suggestions for that teacher who has a blind or visually impaired learner in the classroom.

The parents of a blind child have the most influence over that child's development (Scott, Jan, & Freeman, 1989). With good parenting and adaptive skills, the blind or visually impaired infant will have the foundation to continue a profitable and constructive life. With an inappropriate home life, the blind and visually impaired infant must adapt without much assistance. It is not easy to assist a blind or visually impaired child through the developmental stages, but there are some key

techniques that will be investigate below.

Definitions

To better understand the area of visual impairment, it is necessary for there to be some common definitions.

Auditory - Hand Coordination - When an individual reaches for an object that has given sound cues only (Dunlea, 1989; Landau & Gleitman, 1985; Fraiberg, 1977).

Blind - a (1): Sightless (2): having less than one-tenth normal vision in the more efficient eye when refractive defects have been corrected by lenses. b: of or referring to sightless persons. 2 a: unwilling to or unable to discern or judge. b: unsupported by evidence or plausibility (Webster, 1970, pg. 90).

Echolalia - Repetition of a phrase or word, that has been recently heard by the individual. Echolalia is also part of the symptomology of autism (Dunlea, 1989).

Echolocation - A technique used by the blind and visually impaired to avoid obstacles in their path. The best sounds used are tapping, hissing or snapping. Useful sounds are between 8,000 to 10,000 cycles per second (Dunlea, 1989; Landau & Gleitman, 1985).

Legally Blind - A person whose visual acuity is at 20/200 or less in the better eye with correction, if possible, or has less than 20 degrees vision is considered to be legally blind. (Scott, Jan, & Freeman, 1989 ; Dunlea, 1989; Berger, 1987; Mitzel, 1985; Fraiberg, 1977)

Light Perception (LP) - The ability to distinguish between light and dark. It is suggested that this condition is similar to closing a sighted person's eyes and looking toward a bright light. LP allows a visually impaired person to find windows and distinguish if a light is on in an otherwise dark room (Dunlea, 1989; Fraiberg, 1977).

Partial Vision - those individuals who have some useful vision

that allow them to function in society without major assistance. Most people with partial vision are able to read print with visual aids (Berger, 1987).

Residual Vision - Refers to the amount of light that is perceived by the eye and then interpreted by the brain (Dunlea, 1989; Landau & Gleitman, 1985).

Shadow Perception (SP) - The ability to distinguish when an object passes in front of their eyes. This allows the person with SP to tell when a large object is in their path (Dunlea, 1989).

Snellen Chart - This chart was developed in 1862. It is still being used today in many different settings. The chart was developed to measure the normal eye sight and determine if there was any problems with acuity. It is based on a standard distance of 20 feet. Thus, a person with 20/20 visual acuity has normal eyesight. A person with 20/200 visual acuity can see at 20 feet that which someone with normal eyesight can see at 200 feet (Dunlea, 1989).

Verbalisms - The use of words by blind children that have no meaning for them. Such examples are color terms or situations that they have no first hand experience with (Landau & Gleitman, 1985)

Visual Acuity - How well a person can see. Visual acuity is measured by the Snellen chart.

Visual efficacy - How well a person uses their residual vision (Dunlea, 1989; Fraiberg, 1977).

Visually Handicapped - see visual impairment.

Visual Impairment - For educational purposes "... Those whose limited vision interferes with their educational and/or developmental process. There are two divisions; (1) Partially seeing - those whose limited vision constitutes an educational handicap but who are able to use print as their primary educational media. (2) Blind - those who must

depend primarily on tactile or auditory media for their primary education. The group may include those individuals who may have some residual vision, but whose visual loss is so severe that, for educational purposes, print cannot be used as a major media of learning." (Berger, 1987, pg. 293).

History

How has the blind person been perceived in the past ? There has always been some type of misunderstanding and/or mistrust of the blind person. Some have seen the blind as wise and mystical (Berger, 1987) while others see the blind person as someone to pity. There are also cultural biases that affect a persons perception of the blind. A mother of a blind infant reports that the grandmother who lives in Austria feels that the blind child should be put into an institution (Berger, 1987), yet another family reports that their relatives in Spain cater to their blind child because the relatives feel that the blind child is helpless and hopeless (Berger, 1987). It is difficult to combine different cultures in relationships between two people. When the added variable of a disability occurs, it is hard to put aside cultural bias. By looking at the history of visual impairment and blindness, maybe we can better understand the research findings.

Providing services for the blind infant is not a new trend. In 1893, a nursery was established for the neglected blind infant (Mitzel). Next came the establishment of the Boston Nursery for Blind Babies in 1901 (Mitzel, 1985). Yet, these institutes were not the first residential institutes for the blind community. Berger (1987) discusses the first school for the blind, the Perkins School for the Blind, which was established in Watertown, Massachusetts. Mitzel (1985) tells us that the first

residential schools for the blind were established in New York, Chicago, and Philadelphia between 1832 and 1833. Because these schools were built according to the European asylums (Mitzel) they were not the most appropriate settings for education by today's understandings.

Special education refers to meeting the needs and/or requirements of a disabled child for educational purposes. Jean Marc Gaspard Itad was one of the first to attempt a form of special education in the 1700's (Berger, 1987). He found a young boy in the French woods who was deaf. Apparently the boy had been surviving on his own in the woods for quite some time. Itad was able to bring him in and, after much hard work with the boy, was able to somewhat modify the behaviors. The modification of the behaviors enabled the boy to stay with Itad. There have been a number of early examples of the disabled successfully entering into education during a time when the majority of the population felt that the disabled were not very useful members of the society.

The story of Helen Keller is a well known example. After the Keller's had consulted with Dr. Alexander Graham Bell, they contacted Dr. Anagos and asked him to find a tutor for their blind - deaf daughter. Anne Mansfield Sullivan was sent to the Keller house. After much work, Anne Sullivan proved that Helen could be successful (Berger, 1987). Then there was Samuel G. Howe who, by educating a young girl who was blind and deaf, also substantiated that the disabled could achieve in education (Berger, 1987). Howe is also the founder of the Perkins School for the Blind (Ashcroft & Zambone - Ashley, 1980). With these examples and many more, people began to slowly accept the idea that the disabled population may become a contributing part of the society.

Dr. Berthold Lowenfeld is a leading force behind the education of the blind and visually impaired learner. In an interview with *RE:view*, (1990), he talks about the people and events that were of importance to him. He

first taught the blind after receiving his license to teach in 1922. He has never considered blindness or visual impairment a handicap. Dr. Lowenfeld taught for many years in Vienna while working on his Ph.D. in child psychology. In 1930 - 31, Dr. Lowenfeld came to the United States on the Rockefeller Fellowship. This allowed him to make contacts in the states and take back some ideas from American education. In 1938 he and his wife emigrated when the Nazi's were in Austria. Dr. Lowenfeld has written four influential books ; *The Blind Preschool Child* (1945), *Our Blind Children; Growing and Learning With Them* (1971), *The Visually Handicapped Child in School* (1973), and *The Changing Status of the Blind : From Separation to Integration* (1975). It turns out that this last book is considered, by Dr. Lowenfeld, to be the book that best portrays his feelings about working with the blind population. Dr. Lowenfeld's book, *The Visually Handicapped Child in School* was the first widely accepted text book for teachers training to work with blind and visually impaired children.

In the 1990 interview, Dr. Lowenfeld talks about the people that he feels were the most influential to him. He felt that Mary Switzer, who was the first influential woman in Washington, Kathryn Maxfield, who focused her attention on the education of blind preschoolers, and Florence Henderson, who taught at the San Francisco State College. Florence Henderson and Dr. Lowenfeld consulted with the Variety Club when the club decided to open a residential home for blind and visually impaired preschool children. Dr. Lowenfeld and Henderson persuaded the club that the idea for a residential home be abandoned and instead to provide in - home services for the children. Thus the Variety Club Blind Baby Foundation was formed. This foundation has become nationally recognized for its work with blind infants and preschoolers.

As the blind and visually impaired community grew, there came a need

for protection against discrimination. Of course, this protection came in the form of legislation. Berger (1987) gives a brief summary of the historical legislation of the disabled community. In 1966, the Bureau of Education of the Handicapped was established. In 1971, the Pennsylvania Association for Retarded Children won a case against the Commonwealth of Pennsylvania. The case dealt with the right of all children having assured access to free and appropriate education based on the 14th amendment. The Rehabilitation Act of 1973 assures nondiscrimination under Federal Grant Public Law 93 - 112 which ensures equal opportunities of all handicapped children. Parents and national organizations are the keys behind all of these legislative acts. But they did not stop there. In 1975, the Education of All Handicapped Children Act - PL 94 - 142 passed. This ensured that all handicapped children between the ages of 3 - 18 years, access to free and appropriate education in all federally funded programs. This law also guaranteed the least restrictive environment would be available to the children. The idea of the least restrictive environment is necessary for the education of blind and visually impaired children (CEARSVH, 1991; Scott, Jan, & Freeman, 1989 ; Berger, 1987). The most recent act has been the American Disabilities Act of 1990. While this act uses extremely broad language, many feel that it is a step in the right direction (Leo, 1992).

The National Federation of the Blind was extremely instrumental in the passage of the majority of these legislative acts (Olansky & Hatlen, 1990). The founder of the National Federation of the Blind is Jacobus tenBroek, who was visually impaired. The National Federation is an organization, of and for the blind, lead by lawyers who are blind. The National Federation is the most aggressive organization that will fight in court for the rights of the blind and visually impaired. Its counterpart on the east coast is the American Foundation for the Blind whose executive

director is Robert Irwin. Mr. Irwin was Berthold Lowenfeld's supervisor for some time (Olansky & Hatlen, 1990). The American Foundation for the Blind recognized three types of educational settings for the blind child in 1954 (Ashcroft and Zambone - Ashley, 1980). These settings were ; (a) the private or public residential school, (b) the regular school setting with a resource teacher available during the entire school day, and (c) the regular school setting with an itinerary teacher during regular intervals. Mr. Irwin (whom is also visually impaired), was one of the originators of such programs as talking books, economic assistance for the blind, provisions for rehabilitation, and implementing a program in a Cleveland school which will place blind and visually impaired children in the same class as sighted children (Olansky & Hatlen, 1990). To Robert Irwin, the least restrictive environment was, it seems, a class with both sighted and visually impaired children.

The question of the least restrictive environment is a controversial issue. Should the visually impaired child be put into a residential school , or can they function in the regular classroom environment and still benefit? It all depends on the visual acuity and visual efficacy when there are no secondary disabilities. Dr. Lowenfeld feels that the child should remain in the family setting for as long as possible (Olansky & Hatlen, 1990). But, when should a child attend a residential school and when should they be placed in the public classroom? Much of the time it depends on the child.

The blind community is extremely heterogeneous. This has caused some difficulties in figuring out what is going on. Selma Fraiberg (1977) investigated the similarities and differences in a landmark study of blind and sighted infants. Due to the fact that she was trying to isolate the factor of blindness, she needed to screen out any of the subjects that had secondary handicapping conditions that were detected through tests and

evaluations. The only previous study on the blind and motor development was a comparison study performed by Norris in 1957 (Fraiberg, 1977). Norris used the educational definition of blindness, which may allow some children with more useful vision to skew the results. Many of Fraiberg's findings were insightful and eye-opening.

Dunlea (1989) and Landau and Gleitman (1985), both did studies on the effects of blindness and visual impairment on language acquisition and development. Both studies referred back to Fraiberg's original results in language development. It is very important that when investigating the effects of blindness and visual impairment on language, that all secondary disabilities are ruled out. Unfortunately, this makes for a small number of subjects in each study. A discussion of each of the above studies will follow below

Development of the Blind and Visually Impaired Infant

Selma Fraiberg (1977) was one of the first to conduct a longitudinal study of blind children and their development. The results of her work give a baseline to work from and refer to. By beginning during infancy, Fraiberg, attempted to observe the children to understand where differences began and what can be done to intervene if necessary.

One of the biggest problems is to find subjects that meet the criteria of a study. There can be no secondary handicaps. A large number of blind and visually impaired children have some sort of secondary disability. When a child is cortically blind, there is damage between the eye and the brain (Silverrain, 1987). This damage may be in the optic nerve as well as in the brain. Because the brain is involved in cortical blindness, there may be additional brain damage that would skew the results of a case study if it were not detected. Selma Fraiberg's study began in the early 1960's.

During the 1940's and 1950's, there were large increases in the blind population due to retrolental fibroplasia (RLF). RLF is caused by too much oxygen in the incubation chamber. When a premature child is born, they placed the infant in an incubation chamber to allow the infant to grow in an oxygen rich environment. Because the lungs are not fully developed, the oxygen rich environment is essential. This oxygen rich environment may cause a fibrous membrane to grow over the retina of the eye, thus causing total or partial blindness. There were many premature infants during this time due to a drug that was commonly given to the pregnant women (Olansky & Hatlen, 1990; Dunlea, 1989; Scott, Jan, & Freeman, 1989 ; Landau & Gleitman, 1985; Mitzel, 1985). Because these infants are premature, there is also a chance of mental retardation.

In the Fraiberg study (1977), the sample of 10 blind children were the experimental group. The eye conditions were slightly varied and none of the children had a secondary disability. Fraiberg's methodology was to take notes, observe controlled situations, recorded on film hourly visitations, and offer opportunities for the child to explore. The observation periods lasted approximately one hour and were in the child's home. This allowed Fraiberg to observe the children in a familiar environment.

One of the first interactions between mother and child is the bonding ritual of eye gaze (Scott, Jan, & Freeman, 1989; Fraiberg, 1977). The blind child does not response with their eyes because they cannot see the parent. In turn, the parent feel rejected and ignored (Scott, Jan, & Freeman, 1989; Fraiberg, 1977). When the parent or caregiver is able to maintain contact with the infant through auditory and tactile experiences, the infant will respond. In fact, Fraiberg (1977), shared a case study where a totally blind infant will smile in response to the parents voice. What was first thought to be a fluke, turns out to be normal for well adjusted parent - child relationships. Is there another part of the body

that will automatically take over the area of visual language?

The blind and the deaf have some common modalities of communication, their hands. The blind infant will use a type of sign language to communicate wants, needs, and emotions. Fraiberg, (1977), found that this type of hand compensation noticeably began during the second month of life when the blind infant begins to purposefully make tactile contact with the mother. The blind infants hands would seek contact, during feeding, in areas where there had previously been contact with the mother. There exists an "I want" grasping gesture, when bottles or toys come in brief contact with the infants hands. The emotional state is also evident in the language of the hands.

The hands of a blind child are truly the most obvious route to understanding the environment. Hands are also the key to understanding the blind and visually impaired child's needs and wants. The hands will signal distress when a favorite toy is dropped (Fraiberg, 1977), but, they will not yet venture far from the body in search of the toy for many months. Parents and caregivers must learn to read the signs from the child. By understanding the language of the hands, caregivers and parents will verbalize more freely, because they feel that there is finally some type of response from the infant (Fraiberg, 1977).

The hands of a blind child will help in the recognition of parents and familiars. Fraiberg, (1977), gives the example of Toni. Toni is a well adjusted blind infant who is apparently developing normally. When Fraiberg held Toni to judge stranger anxiety, Toni squirmed and makes unpleasant sounds. Toni then scans, with her hands, the nose and mouth area of the person holding her. Toni discovers that it is not her mother who is holding her. This distresses Toni even more and she begins to cry. When Toni is reunited with her mother, she scans the nose and mouth area a number of times before she is completely reassured. Obviously, the hands are the

explorers of the strange environment in which the blind infant lives.

In a study by Schneekloth, (1989), the play environments for visually impaired and blind children were investigated. The purpose of the study was to observe blind and visually impaired children in their natural play environment. Through observation, it would be assessed if there were developmental delays or inadequacies during unstructured play time. According to the study, there was not a significant amount of play among the blind and visually impaired children, where they were interacting between the environment and the child. Much of the time, the child would stay in one place without exploring much of the surrounding area. Though, there was a comment on the hands of the visually impaired and blind children. Schneekloth found that the hands were never relaxed. They were either exploring, engaging in self - stimulation, or engaged in "general fidgeting" (pg. 195). This "general fidgeting" may have been some emotion that the blind child was, consciously or unconsciously, expressing through the hands. More specific information is needed before any conclusions can be made.

Why don't these children move out into their surroundings ? One possibility is because the blind and visually impaired infant is extremely egocentric. These infants can not readily observe interactions between outside forces. These children cannot see the cause and effect of their actions, or others, on the environment. Sounds do not mean much to the blind and visually impaired infant for many months (Pereira, 1990; Dunlea, 1989; Hill, Dodson - Burk , & Smith, 1989; Landau & Gleitman, 1985; Fraiberg, 1977). In the early months, the environment must be brought to the blind and visually impaired infant. During tactile stimulation is the only time that the infant knows someone or something is interacting with them. So, how can the infant be encouraged to explore and attain object permanence ? Fraiberg, (1977), reminds us that the

concept of object permanence is rather abstract for the sightless infant. A sighted child can see that the favorite toy has dropped. The sighted infant, as vision matures, will follow the trajectory of the object as it falls. Tracking the trajectory leads to the understanding that by looking where the object probably landed, the object will again be in view. Finally, there is the understanding that the object will always be somewhere even if the child is unable to see it immediately. For the visually impaired and blind child, there is not a clear trajectory to follow. When the toy is dropped, it is no longer in existence (Hill, Dodson - Burk, & Smith, 1990; Pereira, 1990; Scott, Jan, & Freeman, 1989; Fraiberg, 1977). Before these infants can obtain object permanence, they must pull together the smells, sounds, and textures of objects to form a concept that will identify the object to the blind and visually impaired infant. Because visually impaired and blind infants must understand a rather abstract concept through inferences, it takes longer for the child to develop object permanence (Fraiberg, 1977). While there is a minor delay in the attainment of this concept, it is not outside of the scale of development for sighted infants.

With close observation, Fraiberg (1977), was able to witness the emergence of the object permanence concept. Again the clues were seen in the hands of the blind and visually impaired infants. There were no movements in the hands when the observer only gave sound clues to let the infant know that the toy was there. Auditory - hand coordination have not yet developed. When the back of the infant's hand was touched before the sound cue was given, there was an initial movement in the hand. Soon this movement became identifiable as a mimicking gesture of playing with the object. Eventually, the child was able to reach for the object on sound cues alone, thus providing evidence that the auditory - hand coordination had evolved (Dunlea, 1989; Fraiberg, 1977).

Fraiberg, (1977), also observed the child during play time. Again the

hands tell much of the developmental story. When a child lost his toy during a play period, the hands continued in the same playful motion mimicking the action that happened just before the object was lost. The next sign was for the hands to return to the place where toys were normally found. This action shows the beginning of object concept outside of the self. If the toy is not found in its place, attention to that missing object is lost.

The concept of object permanence was observed in the blind children of Fraiberg's study (1977), between 7 and 11 months of age. The search for the missing object was random. The infant only came in contact with the object by chance. There was not a systematic search. Permanence of the mother was established between 10 and 21 months of age with a median age of 11 months. Fraiberg, (1977), suggests that permanence of the mother as an object is probably achieved sooner, but without a directional reach, there was no clear evidence. The directional reach on voice cues alone is a very large step for the blind child.

Before a blind and visually impaired child can reach or search for an object, there must be an understanding that the object exists outside of tactile contact. Whereas the sighted child has the use of vision to confirm this fact, the blind and severely visually impaired child must work without pictures. They must assemble an understanding based on sound, touch, feel, and inferences. Inference are an abstract type of thinking which is advanced. When a sighted child reaches for the mother or father on visual cues alone, that is all they understand. The child sees the parent and wants to make contact with the parent. When the parent is out of view, the child did not understand that the parent still exists outside of the infants world. While there is a six month delay in the attainment of object concepts, it is understandable.

Motor Development

Motor development is essential to the blind and visually impaired child (Pereira, 1990, Dunlea, 1989; Schneekloth, 1989; Landau & Gleitman, 1985; Fraiberg, 1977). Without proper motor development, the child will not be able to form clear concepts that are based outside of the self (Hill, Dodson - Burk, & Smith, 1990; Pereira, 1990; Schneekloth, 1989; Silverrain , 1987; Fraiberg, 1977). Fraiberg, (1977), talks about Toni who was developing "normally" and had a mother who already had five other children. At 9 months, Toni started to withdraw. She would lay in a prone position on the floor or rug. This worried her mother and the observers. Toni had not started to move around on her own yet, and apparently was not going to do so without some type of intervention. When next Toni was observed, she was moving around in a walker and again progressing through development. Fraiberg assumes that it was the mobility that was needed. Because Toni was now able to move freely through the environment, she could explore and create a mental concept of "out there". Slowly, orientation began to move from egocentric to exocentric.

Orientation and mobility are extremely important to the blind and visually impaired infant. Schneekloth, (1989), as well as Hill, Dodson - Burk, and Smith, (1990), discuss the need for orientation and mobility training in the formative years. Blind and visually impaired children need to learn early on about the surrounding environment. By figuring out how objects and features of the environment relate to self and surroundings, spatial awareness develops. Mobility for the blind and visually impaired infant is not possible until the infant can demonstrate auditory - hand coordination (Hill, Dodson - Burk, 1990; Dunlea, 1989; Landau & Gleitman, 1985; Fraiberg, 1977). Once this is attained, and the infant has the right posture for creeping, independent mobility can now be achieved.

Fraiberg, (1977), found that while there were no motor development

delays in the well stimulated blind and visually impaired baby. Their self-motivated mobility was definitely delayed (Hill, Dodson - Burk, & Smith, 1990; Fraiberg, 1977). Fraiberg was one of the first to see how vision affected the mobility of children. Sighted children will change posture or pay attention to something that is within the visual field, but out of reach. Neither the sighted or blind child will react to stimuli on sound cues only until the last trimester of the first year. Long range stimuli, through sound or smell, will not attract the child's attention until the child is able to reach directionally towards the source. Fraiberg, (1977), suggests that as the child begins to sit, creep, stand, and then walk, less and less of the body is in tactile contact with the ground. Without proper stimulation, the blind and severely visually impaired children will seek contact with the majority of their skin surface (Fraiberg, 1977).

There is a pattern of progression then slight regression in the mobility development of the blind infant (Fraiberg, 1977). As the infant develops and enters different planes of mobility, the child must relearn what has been mapped before but in a different plane (Fraiberg, 1977). While the sighted child can visually scan the changes in perspective, the blind child must relearn through slow and systematic mapping. This may explain why the average age for creeping in Fraiberg's 1977 study was 13.25 months of age, and the average age for walking was 19.25 months. These ages are approximately six months behind the sighted child's age of achievement.

Blindisms

Blindisms are specific behaviors that most blind children exhibit. (Dunlea, 1989; Landau & Gleitman, 1985). These behaviors include rocking of the head or body, digging at the eyes, echolalic speech, and stimulation of residual vision at close range. This last behavior may be achieved by finger waving or hand flapping directly in front of the eye with the best

vision. These behaviors are noticeable and may cause sighted person unease. Blindisms are usually apparent in the young blind child. These behaviors help to stimulate the child when the stimulus of vision is absent (Landau & Gleitman, 1985). These behaviors have a reverse affect on the social interactions of children with their peers. Many times, the blind child is not fully aware that these behaviors seem strange to others. As the blind child matures, and there is appropriate stimulation, these behaviors may disappear.

Language and the Blind and Visually Impaired Child

Language is very important to the blind and visually impaired child. These children must rely on verbal descriptions and proper communication to easily function in society. By looking at the development and acquisition of language, and compare blind and visually impaired children with sighted children, it may be determined if intervention is necessary. If intervention is necessary, these comparisons may suggest at what point intervention would be the most valuable. The question of delays in the language development and/or acquisition are addressed in several studies. Also, the question of whether meanings remain constant in the world of the blind and visually impaired child. Fraiberg, (1977), compared the blind children in her study to sighted children in the appropriate age ranges. She found that there were more names and labels in the vocabulary of the blind child. As far as language development and acquisition, Fraiberg had excellent results. Her ten subjects were compared against the Bayley scale of development. In early stages of language development, the ten subjects showed a range of achievement that was comparable to the Bayley scores. As the children matured, they were rated on how their response to

requests and commands . All of the subjects were within the normal range of the Bayley scale, and 50% were above the median age. Ninety percent of Fraiberg's subjects passed the "Says Two Words" criteria with 20% above the median age for the Bayley Scale. The next step, "Makes Wants and Needs Known", is passed by all of the subjects with 40% above the median age. But, on the last item, "Sentences of Two Words", only 70% of the subjects passed within the Bayley range with 20% over the median age. Fraiberg feels that these subjects were given greater opportunities, due to the nature of the study, that allowed them to progress at a faster rate.

Dunlea, (1989), is very interested in the emergence of meaning in the blind and visually impaired child. In reviewing Fraiberg's 1977 study, Dunlea feels that while the early acquisition show no delays, the later language development delays are more in line with the delay in object concept. If there are no pictures for the child to work with, how can they truly understand the meaning behind the words in the language?

For the Dunlea (1989) study, the children involved must meet strict criteria. There were a total of six subjects. Two were blind from birth, with one having light perception only. Two more children had shadow perception and extremely limited vision (minimal form recognition). All of these children demonstrated that they were on a normal developmental progression. None of these children had any secondary disabilities. This important criteria helped to narrow down the variables in the study. There were also two sighted children who were there for comparison. All of the children were English speaking only, and their families had a stable economic base. It was also important for the parents to be involved and interested in the study. With the parents interest, there was a certain amount of reliability built in.

Observations of each child were taken for one hour in the home. Families were visited once a month and observed during their daily

routine. Both video and audio recordings were used to gather data as well as written notes by the observers. This is a longitudinal study. Some of the children were observed for up to a year. Mothers were asked to keep track of their children's early words in a diary. The circumstances surrounding spontaneous novel word usage were recorded by the parents on special forms developed by the researchers. The diary was kept for the first 100 words of the child's vocabulary. Mothers were also interviewed as in regards to their child's frequent usage of these words.

Dunlea, (1989), also used developmental assessment to determine where the child's progression through normal development. Both the Bayley and Maxfield - Buchholz scales were used at six month intervals. These particular scales were used for comparison among the sighted population. Dunlea also used controlled observation and individual experimentation. When experiments were used, they were designed specifically for each child. Each session was recorded and then transcribed. The results of this study will be discussed below.

Londou and Gleitman, (1985), studied language development in three blind children. Two of the children were 2.5 to 3 months premature. Both of these children experienced retrolental fibroplasia (RLF) from oxygen rich environments. The child who was born full term had a deficient optic nerve development. Vision ranged from no light perception to shadow perception. These children fit the criteria of minimal perception, no brain damage and stable economic environments. Each child was observed once a month. Every session was recorded in some fashion with one or more media. Media used were audio recording, video recording, and written notes of the session. Mothers were asked to keep diaries of the children's first 100 words.

Londou and Gleitman, (1985), were extremely interested in the blind and visually impaired child's use of "look" and "see". These are visual

terms that are not believed to be fully understood by the blind population. Through controlled observations and experimental models, Landau and Gleitman were able to observe the behaviors of the blind children when they were told to "look" in a certain direction. These results were compared with sighted children's reactions to the same commands. In regards to language development, Landau and Gleitman decided that while there were delays within the blind children's language, these delays were not serious as they were still within the bottom range of the sighted child's language scale of development. Further discussion will follow below.

First Words

It is a very exciting time when a young infant first begins to talk. All of the preverbal sounds and interactions are precursors to language (Moore & McConachie, 1990; Dunlea, 1989; Landau & Gleitman, 1985). The blind infant will also make use of the preverbal sounds and certain hand gestures (Dunlea, 1989). A big question here is whether or not the blind child and the sighted child develop their lexicons differently, or the same. Dunlea, (1989), studied the emergence of first words in both blind and sighted subjects. By observation, reviewing recorded material (both audio and video), and with the cooperation of the mothers diaries, Dunlea was able to identify the first 100 words of her subjects. She notes that the types of words that are acquired are similar. There are definitely qualitative differences.

The blind and visually impaired children in Dunlea's 1989 study acquired many names of objects (35 - 51%) and personal names. Her sighted subject had an object name percentage of 49. Names of people and pets were higher in the blind children, with 10 - 13% of their vocabulary being proper names, while only 1% of the sighted subject's vocabulary included names of people or pets. There is also an absence of idiosyncratic

words in the blind child's vocabulary. These child - created words are common in the sighted child's vocabulary and will disappear after a while. The totally blind children did not create words of their own. Nor did these children lose much of their vocabulary. Dunlea, (1989), reports that there is an increase in child - created words with increased vision. With the one subject that has some useful residual vision, 1% of the child's vocabulary were child - created. Whereas, the sighted subject had 6% of his vocabulary with child - created words. The consensus seems to be that the totally blind children need specific names for items (Moore & McConachie, 1990; Dunlea, 1989; Landau and Gleitman, 1985). Dunlea, (1989), did not find blind children generalizing much. Generalization deals with classification and extension skills.

The sighted child will visually classify items together that seem to have the same properties (Moore & McConachie, 1990; Dunlea, 1989; Landau & Gleitman, 1985). Classification is seen when a young language learner will classify a dog and horse in the same category. Both animals have four legs, a head, a tail, and can run. Later, as the child matures, each animal will fall into separate and proper categories. The blind and visually impaired child seems to need a specific name for each object (Moore & McConachie, 1990; Dunlea, 1989; Landau & Gleitman, 1985). Without the use of vision to quickly categorize an item by matching pictures, the blind and visually impaired child must match texture, smell, taste, sound, and context to classify an item (Dunlea, 1989; Fraiberg, 1977).

The usage of action words is different when comparing the blind and visually impaired children with the sighted children. In Dunlea's study, (1989), 17 - 24% of the blind and severely visually impaired subjects used action verbs in their vocabulary. The sighted subject had 24 action words in his first 100 words. The difference is in the quality of the words. The blind and severely visually impaired children used these words

in relation to themselves. While the sighted subject used the action verbs in relation to himself as well as in relation to the surrounding environment (Dunlea, 1989; Landau & Gleitman, 1985). Dunlea, (1989), feels that while the acquisition of words is similar between blind and sighted children, the meanings are different.

"Look" and "See" and the Blind Child

Landau and Gleitman, (1985), investigated the blind child's understanding of the words "look" and "see". They wanted to understand how the blind child interprets these words in their own vocabulary. Landau and Gleitman, also studied the blind child's understanding of "look" and "see" as those words related to others. The control group consisted of sighted children who were of the same developmental age and intelligence. The sighted children were blindfolded and then asked to "look at ...", "look up...", or "look with your". The results of these investigations were collected and compared with the blind child's responses to the same questions. There were two main differences. First, when the blind child was told to "look up at the ceiling", these children would lift their hands to the ceiling, but would not orient the head in the direction of the hands. When the sighted children were blindfolded and told to "look up at the ceiling", only the head oriented upwards. The hands of the sighted children stayed in a relaxed position. Secondly, when the sighted children were told to look at an object with a part of their body (i.e. feet, hands, ears, nose), they would orient the head first, then orient the portion of the body that was suppose to do the looking (Landau & Gleitman, 1985). The sighted children then proceeded to pretend that the body part had grown eyes and was "looking". When the blind children were asked to look at objects with body parts, they would try and explore the object with that body part as fully as possible (i.e. sniffing with the nose, testing, and listening).

The findings of Landau and Gleitman, (1985), suggest that the blind

child has a particular meaning for these visual terms that are, not surprisingly, different from that of the sighted child. When a blind child wishes to "look" at something, this means to explore the object with the hands (Landau & Gleitman, 1985). Landau and Gleitman, (1985), also explored the blind child's concept of "look" and "see" as they relate to sighted persons. Their subject, Kelli (who was three at the time of this study, and had no residual vision), was able to distinguish between letting a sighted person "see" an object and giving them an object to explore manually. Kelli was also able to understand that the sighted person needed the object in their line of sight to explore it visually. It is important for the differences to be known.

Landau and Gleitman, (1985), wanted to see if there was a difference between "looking" at an object and "touching" an object. Kelli was told to "look at ..." or "touch the ...". When the term touch was used, Kelli would lightly touch the object with a finger or palm. When Kelli was told to "look at ..." she would explore the object fully with her hands. This suggests that there are distinct meanings for each of the words. Kelli was compared against the sighted control group who would always orient the head when told to "look at ...". One sighted child did attempt to explore manually. Due to inexperience, the child was ineffective.

Stereotypic Speech

Both blind and sighted children use parental phrases during their early language development (Moore & McConachie, 1990; Dunlea, 1989; Landau & Gleitman, 1985). It seems however, that the blind child does not progress as rapidly away from this type of speech, as do the sighted child. Dunlea, (1989), reports that blind and visually impaired children begin to use communicative stereotypic speech. Blind children will begin to use paternal phrases to meet their needs or wants. Dunlea suggests that the blind and visually impaired child will use phrases such as "do you want X?"

when requesting an object. These reversals continue on into requests for action. Dunlea, (1989), suspects that the blind and visually impaired children may be using these parental phrases as identifiers for the action that is taking place. Some examples may be when the child is going to bed, he may say "Teddy go nite - nite", or when finished with a meal, "Teddy all done". In the Landau and Gleitman 1985 study, some of the blind and visually impaired children would use the phrase "give it to me" or "gimme" when asking someone to take something from them. While this type of reversal is evident in sighted children, it will last only a short period of time. Dunlea, (1989), feels that this stereotypic speech may be very important to the child's ability to draw together the sensory information to conceptualize the environment. Dunlea also suggests that to the blind and visually impaired child the language of the parents may be interpreted as part of the action. Thus, Dunlea, (1989), feels that language input may be of even more importance to the blind child than to the sighted child.

Verbalisms

Verbalisms are evident in the blind and visually impaired child's language development. These are terms for which the child has no first hand information (Stratton & Wright, 1991; Moore & McConachie, 1990; Dunlea, 1989; Landau & Gleitman, 1985) Therefore the children are using words that have no meaning for them. Such words may include color terms for the totally blind child. It is difficult to determine if the color terms are true verbalisms or not. Even if the child has slight residual vision, they may be able to determine bright primary colors.

In sum, the language development and acquisition of blind, visually impaired, and sighted children are approximately the same (Moore & McConachie, 1990; Dunlea, 1989; Landau and Gleitman, 1985; Fraiberg, 1977). The differences are in the quality and types of words that build the early vocabulary of the blind infant. Many of the findings show that the

differences begin to become less as the vision increases (Dunlea, 1989; Landau & Gleitman, 1985). This suggests that the role of vision in the language development and acquisition is larger than previously thought.

Literacy

Another aspect of language is literacy. Stratton and Wright, (1991), define literacy as "The quality or state of being literate, especially the ability to read or write." (pg. 55). Teaching the process of reading and writing to the blind and visually impaired child is similar to teaching the same process to a sighted child. There are however, two unique differences between sighted, visually impaired, and blind children's emergent literacy (Stratton & Wright, 1991; Dunlea, 1989; Landau & Gleitman, 1985). The two factors that affect literacy in blind and visually impaired children are, the delays in reaching, creeping, and walking, and hand skills (Stratton & Wright, 1991). These factors relate directly to the amount of experience that the child has with environmental situation. Dunlea's, (1989), investigation into the meaning of words by the blind child relate directly to literacy. Without proper experiences, the blind child has limited information on which to build understanding of the meaning of the words used in language. Since we know what skills need to be developed, the question is how to best assist the child in achieving reading and writing skills.

According to Stratton and Wright, (1991), the important factors to help children with their emerging language is through; (1) direct experience with concrete objects and situations, (2) reading aloud to the children, and (3) helping the child to become aware of print and/or Braille as it relates to written language. Interestingly enough, an article by Miller, (1985), relates a story about how a mother involved a totally blind child in family reading time. The experience related is an excellent example of how the blind child can achieve literacy. This mother wanted

her blind daughter, Jamaica, to have the same appreciation of books that the rest of the family had. Books were adapted with tactile labels for identification and, whenever possible, concrete objects that related to the book, were gathered and explored during the appropriate times of the stories. Jamaica was also involved in turning pages. Stratton and Wright, (1991), feel that this indicates to the child that the words are not coming out of nowhere, but actually are related to some form of written material that is either read with the eyes or hands.

Hand skills are another difference between the emergence of language in the blind and visually impaired child. If the blind or visually impaired child has poor exploratory skills, only exploring one side of an object or not fully exploring all angles of the object, the language will suffer. Children should have early exposure to the media that will be used in their educational settings, either Braille or print (Stratton & Wright, 1991). Scribbling, which is a precursor for writing in both normally sighted and low vision students (Stratton & Wright, 1991). Stratton and Wright, suggest that children who will be using Braille, should have time and opportunity to explore the uses of a Braille writer. Stratton and Wright, are not sure that experience with a Braille writer is important in stimulating writing skills for the Braille user. More research needs to be done in this area.

The Blind and Visually Impaired Child in School

Vision is the way that sighted children learn 90% of the time (Ashcroft & Zambone - Ashley, 1980). When there is a breakdown in the visual apparatus, how learning is achieved will become limited. The severity of the visual condition will dictate the limitation boundaries. Unfortunately, even minor vision problems can cause learning problems. Many of the minor problems can easily slip through detection by the school nurse. Teachers can assist in the detection of vision problems by noting

just a few things. Here are some common eye problems that continue to go undetected in today's schools (Scheiman, 1991)

Difficulty with laterality and directionality - This is poor development of left/right awareness. Symptoms are (1) has trouble with learning right and left, (2) may read left to right or right to left, (3) reverses letters and words, and (4) has trouble writing and remembering letters and numbers.

Faulty visual form perception - when the child has trouble discriminating between different form shapes. The symptoms are (1) confuses likenesses and minor differences, (2) mistakes words with similar beginnings, (3) the inability to recognize the same word that appears several times on a page, (4) cannot recognize letters or even simple forms, (5) cannot distinguish main idea from insignificant details, and (6) has trouble learning the alphabet, recognizing words and letters, and learning basic math concepts such as size, magnitude, and position.

Faulty visual memory - When a child has trouble remembering what has been seen. Symptoms are (1) has trouble visualizing what has been read, (2) has poor comprehension skills, (3) has trouble learning new material, (4) is a poor speller, (5) has poor recall of visually presented material, (6) has trouble with tasks that require more than one step, (7) has trouble with mathematical concepts, and (8) trouble with sight vocabulary.

Faulty visual motor integration - When a person is unable to process and then reproduce a visual image by writing or drawing. Symptoms are (1) sloppy writing and drawing skill, (2) the inability to space letters or stay on the line, (3) poor copying skills, (4) erases excessively, (5) can respond orally, but not in written

form, and (6) seems to know the material, but does poorly on tests.

Nearsightedness - The inability to see distant things well. Symptoms are (1) squinting, and (2) getting close to the board

Farsightedness - The inability to see near things well. Symptoms are (1) rubbing of eyes, (2) "watery" eyes, and (3) complains of blurred vision.

Astigmatism - This condition causes blurry vision in both near and far vision. Symptoms are (1) closes or covers one eye, (2) letters and words appear to move, (3) loses place, (4) is inattentive, (5) loses place when reading, (6) eye rubbing, (7) "watery" eyes, (8) blurred vision, and (9) poor reading comprehension.

Focusing Disorder - This is the inability to control the muscles of the eye during accommodation. Symptoms are (1) blurred vision when looking near to far or far to near, (2) holding things close, (3) headaches when reading, (4) tired at the end of the day, (5) inattentive, (6) "watery" eyes, (7) eye rubbing, and (8) poor reading comprehension.

Tracking Disorder - The inadequate ability to scan from one point in space to another. Symptoms are (1) head moves during reading, (2) loss of place when reading, (3) skips lines when reading, (4) uses finger to keep place, (5) poor reading comprehension, and (6) short attention span.

The Least Restrictive Environment

Education for all children should adhere to the idea of the least restrictive environment. This is an environment that will allow a child to receive the best education possible while removing as many barriers to exploration and learning as possible. This type of environment is extremely important to the visually impaired and blind child. Therefore, it

is a controversial issue. Where will the blind and visually impaired child best be served? Where will the child get not only the educational benefits, but also the social and emotional benefits that are so necessary to any human being?

In a position paper, the Council of Education of American Residential Schools for the Visually Handicapped (CEARSVH), expressed a feeling that many of the visually handicapped students should be enrolled in a residential school. They state that there are many types of programs within the school that allow integration with the nondisabled population on many levels. The CEARSVH reasons that the visually impaired and blind population are suffering from sensory deprivation, therefore, they feel that the residential schools offer the least restrictive environment for those students.

Others, feel that it is more important for the child to stay within the family setting and local community (Olansky & Hatlen, 1990; Ashcroft & Zambone - Ashley, 1980). This facilitates the growth of healthy parent - child relationships. Also, by allowing the child to stay in the home community, sighted person may learn more about the world of the blind and visually impaired. As long as the regular school setting is providing the necessary aides and support services, and the child is benefitting from the experience, there should be no reason why the blind and visually impaired child cannot be integrated into the regular classroom.

Mainstreaming

Mainstreaming is not a new practice for the education of blind and visually impaired children. Since the early 1900's, visually impaired and blind children have been taught in the regular public day schools (Ashcroft & Zambone - Ashley, 1980). When mainstreaming begun there were not many teachers who had experienced the educational needs of a visually impaired or blind child in the classroom. Olansky and Hatlen, (1990),

discuss, with Dr. Lowenfeld, the use of outreach programs that were sponsored by the local schools for the blind. On Saturday mornings, there would be a meeting at the school for the blind, for all the local teachers to attend. The meeting is a time for the public school teachers to talk to the teachers at the school for the blind. This allowed the teachers to exchange ideas from both sides of the fence. Many creative and helpful ideas pass between the two groups. These outreach programs started in the mid 1950's (Olansky & Hatten, 1990). Unfortunately, these programs did not last.

It has been found that teachers who deal best with the visually impaired and blind learner are those who have had contact with the blind community before (Bacon & Schulz, 1991). Outreach programs are an excellent way for teachers to learn about the blind and visually impaired child. Many times, when a teacher has had contact with the disabled population, they are better able to understand the needs of the child. How do the teachers in the regular classroom, who may not have had any type of special education instruction, best serve the visually impaired learner? Before we can answer this question, we need to know who is allowed into a mainstreaming program.

According to PL 94 - 142, the right of all handicapped children to receive free and appropriate education was assured (Berger, 1987). In a 1975 position paper, the National Education Association (NEA) supported mainstreaming as long as:

- * It provides a favorable learning experience for both handicapped and regular students.
- * Regular and special teachers are prepared for these roles.
- * Appropriate instructional materials, supportive services, and pupil personnel services are provided for the teacher and the handicapped student.

- * Modifications are made in class size, scheduling, and curriculum design, to accommodate the shifting demands that mainstreaming creates.

- * There is a systematic evaluation and reporting of program developments.

- * Adequate additional funding and resources are provided for mainstreaming and are used exclusively for that purpose, (Ashcroft & Zambone - Ashley, 1980; pg. 23) .

This means that the more severely handicapped children (i.e. multiply handicapped, severe emotional or mental disabilities), would need to be closely evaluated to see if they would benefit from the regular classroom setting.

What can the teacher do to best meet the needs of the visually impaired or blind student? In a survey of mainstreaming practices, Bacon and Schulz (1992), they surveyed both elementary and secondary teachers. When asked what modifications, if any, do they make to their teaching method when a disabled student is in attendance. The top answer for the elementary teachers, (50% with a n = 20), was individual work assignments (either 1;1 or 1;3). Whereas the secondary teachers, (67% with a n = 15), felt that working at a slower pace or reducing the work of the student was the best thing to do.

In an article by Lois Horrell, (1984), Horrell wrote that by giving a child experience and exposure to new situations, they would grow in all areas of development. The thing for teachers to remember, is that the child is there first. The disability is there as a second characteristic. By doing some slight modifications to teaching method and style, there could be benefits throughout the entire class.

The most effective modifications are simple one. By allowing the blind or visually impaired child to select their own seat, you are giving them the opportunity for success (Ashcroft & Zambone - Ashley, 1980). In

a study by Knowlton, Woo, and Silverstein, (1991), they reviewed their finding on the performance of visually impaired children on accommodation tasks. These tasks take place naturally in the classroom when the focal length between the eye and reading matter change. They found that it takes longer for the visually impaired child to accommodate the change in focal length. The difference in the amount of time between each finished task took longer as the visual condition became more severe. Therefore, teachers can assist these children by helping them to discover where it would be most beneficial to seat them.

Guidelines for the teacher with a visually impaired or blind student

The general rule for governing all of these guidelines is that the teacher must, with the blind or visually impaired child, determine how much assistance is necessary. Not all students need all aids. Partially sighted students need less aide than those who have more severe impairments.

1. It is important for the child to be familiar with the layout and configurations of the classroom. This can be established by guiding the child around the room sequentially. It may be best to orient the child using her/her desk as a reference point.
2. If a visually impaired child has any useful vision, allow the child to pick a seat that will best meet their needs. Different eye conditions make for different beneficial settings.
3. It is important that the child have all the sensory aids that are useful to that child. Many times, these materials can be obtained through the resource or special education teachers.
4. To enhance the experience for everyone, and especially the visually impaired and blind child, integrate tactile, auditory, and olfactory stimulation into the lesson. By bringing in items that are concrete and

explorable by the blind as well as sighted students. Better understanding will be facilitated.

5. Encourage participation in physical activities. Tumbling, dancing, skipping, and other like activities help the child to develop spatial awareness, sensory development and social interaction. Ashcroft and Zambone - Ashley , (1980), suggest allowing the visually impaired and blind student to run down a clear hallway with either a second child as a guide or by using the wall as a guide.

6. The key to successful integration is the teacher. The sighted students in the class will look to the teacher to see how to react to the visually impaired or blind child (Bacon & Schulz, 1991).

7. The teacher should not drastically change or modify the curriculum for the blind and visually impaired students. Reduced work may cause feeling of resentment toward the visually disabled learner from the sighted students that are required to complete the full assignment. Also, below level assignments may have a detrimental effect on the visually impaired and blind students.

8. Encourage the child to take part in the extra curricular activities within the school.

9. Allow creativity to flow when modifying the lessons. When a successful option is discovered, share it with other teachers, as it may help them in the future.

10. Verbalize everything that you write on the chalkboard and overhead.

Parents of the Blind and Visually Impaired Child Diagnosis and Reactions

Every parent wants to have the perfect child. Most pregnant women do not allow themselves to dwell on the possibilities of their new infant

having any disabilities. When the baby is born and diagnosed as being blind, most parents are shocked. The parents must go through a time of adjustment to this new characteristic of their newborn.

When an infant is diagnosed at birth as being blind, the parents may have a harder time adjusting to the new infant. The disability will generally come before the child (i.e. the "blind baby" instead of the baby who is blind). This generally means that the child will grow in an environment that is filled with excessive concern and worry (Scott, Jan, & Freeman, 1989).When the eye is damaged internally, there may be no signs of the impairment for many months. Usually, the impairment is discovered between three and six months (Scott, Jan, & Freeman, 1989; Berger, 1987; Fraiberg, 1977). The parents notice that their child is not visually tracking or that their child has a wandering eye. The parents have come to love and know the child first and consider the disability second. It is interesting to note that children who lose their sight after a few years, whether through accident or illness, adjust better to the loss than do the adults (Scott, Jan, & Freeman, 1989). While these parents must also go through a period of adjustment, many times it is the love for the child that will help them through (Scott, Jan, & Freeman, 1989).

Hospital stays also affect the parent - child relationship. When an infant must stay in the hospital for extended periods of time, the parents do not have the same early experiences with their child that parents of normally sighted children. The early foundations of a good, healthy relationship have been disrupted. Thus feelings of resentment toward the infant may be difficult for the parent to overcome (Scott, Jan, & Freeman, 1989; Berger 1987).

The first emotion that the parents go through is grief (Dunlea, 1989; Scott, Jan, & Freeman, 1989; Berger, 1987; Landau & Gleitman, 1985; Fraiberg, 1977). The mourning of the lost "perfect" baby is very real.

During this period of time, it is helpful if there is someone around to help with the care of the infant (Fraiberg, 1977). While assistance is useful and needed, parents still need to maintain primary care of their young infant. This activity will enable both the needs of the parents and the needs of the child to be met.

Resentment towards the child is a normal emotion for parents to feel. The blind and visually impaired infant take up much more time than a normally sighted infant. While parents are in this stage, there are many questions such as "Why me?" and "What did I do wrong?". These questions are normal and parents need to know that it is okay to ask them. Feelings of guilt tend to pile up with resentment because the parents do not know that these are normal feelings. Some parents are able to get out of this cycle on their own, while others may need professional help. If there are any additional problems, such as medication or therapy, the parents are always going to appointment for the child. The best way to overcome resentment is to try and enjoy the time spent with the child (Scott, Jan, & Freeman, 1989). Inventing games, reading stories, and observing the progress that the child is making, help the parent deal with these feelings.

Acceptance is the final goal for emotional adjustment (Scott, Jan, & Freeman, 1989; Fraiberg, 1977). Once a parent accepts the fact that the child is blind, a stable environment has been established. Occasionally, parents may feel grief and resentment again, but these feelings are temporary which do not last for very long. With acceptance, the parent can then begin to think about what can be done to modify the environment to allow the infant to have the most interesting and useful experiences.

Guidelines for the Parents

The best thing that a parent can do is to understand, to the best of their ability, the cause and implications of their child's impairment. Many

times, when parent gain knowledge about their child's condition, they become advocates for the rights of the disabled. Advocacy has its own benefits, but not everyone is able to handle such intense commitment. There are many things that a parent can do in the home that will be just as beneficial to the child. In fact, it may be more so since, with the right environment, the blind and visually impaired person will be able to stand up and represent themselves.

Creating stimulating environment within the home, is essential. The authors of *Can't Your Child See*, suggest high contrasting images for the child who has some residual vision. When an infant has some residual vision, it is helpful if the parents encourage the use of that vision. By using bright colors and good lighting, the infant may be able to see enough to encourage much needed exploration. Bright colors and high contrasts do not truly benefit the totally blind child since they are not able to see them. Instead, using differing textures, auditory stimulation, and scented items will enhance the infants exploration (Scott, Jan, & Freeman, 1989). Attaching a bell or rattle that will sound when touched, will assist the infant in auditory - hand coordination. This will also allow the infant to comfort themselves after the onset of object permanence.

One of the most important things for parents to realize is that they must encourage exploration and independence within their child (Olansky & Hatlen, 1990; Scott, Jan, & Freeman, 1989). Overprotective parents may actually hinder the child's development (Olansky & Hatlen, 1990; Scott, Jan, & Freeman, 1989; Fraiberg, 1977). Learned helplessness is a child's own worst enemy. By allowing others to do that which the blind or visually impaired child is able to do, that child is robbed of the opportunity to discover new abilities by stretching the existing boundaries. It is a fine line between overprotection and protection. Only by standing back and allowing the child to discover things for themselves

will these children become independent and sure of themselves (Olansky & Hatlen, 1990; Scott, Jan, & Freeman, 1989; Fraiberg, 1977). Through first hand experience can a child know the thrill of successfully completing a challenging project.

Play is very important in the life of the visually impaired and blind child. With slight modifications, blind and visually impaired children can participate in most activities. Without play, there could be delays in motor and cognitive development as well as delays in social skills (Schneekloth, 1989). Schneekloth's study on play environments for the visually impaired and blind child, found that many of the delays that are expressed in developmental studies, may not be due to the blindness alone. Activities such as dancing and tumbling will allow the blind and visually impaired may develop spatial awareness. The overall results of the study suggest that motor and mobility delays could be due to the fact that the blind and visually impaired child lack experience with gross motor activity in the environment (Hill, Dodson - Burk, & Smith, 1990; Pereira, 1990; Schneekloth, 1989).

Parents can help in this area of motor and mobility development by encouraging large motor activities such as tumbling, dancing, rolling, and skipping (Ashcroft & Zambone - Ashley, 1980). An easy way to enhance the play environment for the blind and visually impaired child is by allowing the child to play with everyday objects. Things such as doorknobs, latches, pots and pans, keys and locks, and other cause and effect toys. Fuzzy and furry toys are not a favorite of the blind or visually impaired child (Scott, Jan, & Freeman, 1989.; Schneekloth, 1989). For some reason, the children seem to express distress when they come in contact with these items.

Outdoor experiences in play are extremely beneficial for the blind and visually impaired child (Hill, Dodson - Burk, & Smith, 1990; Pereira, 1990; Schneekloth, 1989 ; Scott, Jan & Freeman, 1989). A visit to the beach or

woods will allow the visually impaired and blind child to experience a novel sensation. Smells, sounds, and textures are all different and many hours of exploration can be spent. Even the backyard of the family home is an exciting trip. Setting up a small obstacle course can help the child become more spatially aware of the surroundings. By slowly increasing the difficulty of the course, the blind and visually impaired child can increase their mobility. *Can't Your Child See* (1989), by Scott, Jan, and Freeman, has lists of suggested activities.

Conclusions

The developing child is a complex and intricate being. There has been much research on how the child matures and develops. There has also been much controversy on who is right about the process by which they develop. But what about the child who has been deprived of a sense that play such a major role in the development. Vision is important to the development of the child. Vision allows persons to rapidly collect and evaluate information about their surroundings in a short amount of time. Blind and visually impaired persons must take a less direct route to explore and evaluate the same area. This major difference concerns which sense will dominate during the early stages of development.

Fraiberg, (1977), has done the longest and most intensive study of blind and severely visually impaired infants to date. Fraiberg had ten blind children, which is a small sample when trying to generalize these findings to a community. The problem with the blind and visually impaired community is its diversity. Many times, a child is not "just blind". There are many secondary conditions. This causes a problem when determining criteria for experimental models. Since the Fraiberg, (1977), study was a longitudinal study, some of these limitations were lessened.

Nevertheless, Fraiberg's study, (1977), was one of the first of its kind. Due to Fraiberg, some of the mysteries of blind infant development were solved. We now know that it is important for the blind child to have varied sensory experiences. Also, Fraiberg's study suggests that there is a critical point in the motor development of the child. At approximately nine months of age, it is essential that the blind infant begin to experience the environment around themselves through mobility. Without self initiated mobility, the blind child will withdraw into themselves. These children will seek complete tactile contact with floors and rugs, to receive maximum stimulation (Fraiberg, 1977). A blind or visually impaired infant who does not explore the environment on their own, will prefer the amount of contact that the ground offers them, to the amount of stimulation offered when standing on two small feet.

Parents play an important role in the development of the blind and visually impaired child (Scott, Jan, & Freeman, 1989; Berger, 1987). Through play in various settings, parents are able to assist the child's spatial awareness (Pereira, 1990; Hill, Dodson - Burk, & Smith, 1990; Schneekloth, 1989). As understanding of relationships between self and environment, as well as objects and environment, the blind and visually impaired child will increase their self - initiated mobility (Pereira, 1990; Hill, Dodson - Burk, & Smith, 1990; Schneekloth, 1989). The route of kinesthetic mapping is slow and tedious. The blind and visually impaired child must work with minimal visual input, or none at all, and still develop concepts of space and objects (Bigelow, 1990; Dunlea, 1989; Fraiberg, 1977). No wonder there are some delays in mobility.

Schneekloth, (1989), and (Bigelow, 1990) and (Pereira, 1990), all seem to suggest that it is not the blindness itself that is causing these delays, but the lack of experience. This lack of experience will cause the child to hesitate when in an unfamiliar, (or familiar in extreme cases),

setting. This hesitation also inhibits the child's ability to explore and interact with the environment (Hill, Dodson - Burk, & Smith, 1990; Pereira, 1990; Dunlea, 1989; Schneekloth, 1989; Landau & Gleitman, 1985; Fraiberg, 1977). Lack of interaction with the environment, causes more delays, and the child is in danger of entering a vicious cycle of developmental delays. Yet, it seems easy to break this cycle through appropriate and varied experiences with objects and environments. By giving the child a taste of what is out there, and helping them to find the right modality of exploration, the whole world is open to them. If it is so easy, why do we still have children with drastic delays ? Because there are many other factors that come into play. Blindness and visual impairment is not always a primary condition. It may be in relation to prenatal exposure to toxic substances, genetic factors that cause blindness as well as a secondary disabling condition, or "an act of God" with no reasonable explanations (Scott, Jan, & Freeman, 1989; Berger, 1987; Fraiberg, 1977). Therefore, it is difficult to say "THIS IS THE WAY". There is no concrete right or wrong path to development. Each child must be evaluated as an individual and what is best for that individual.

Dunlea, (1989), and Landau and Gleitman, (1985), were the main researchers for language of the blind and visually impaired child. Again, vision plays a large role in the development of the meaning of language (Moore & McConachie, 1990; Dunlea, 1989; Landau & Gleitman, 1985; Fraiberg, 1977). Without the visual sense, the blind and visually impaired child must work in a world without pictorial references (Dunlea, 1989; Landau & Gleitman, 1985). These children must pull together kinesthetic, olfactory, and auditory information to form a concept and relate language to the world around them. Again, experience seems to be the key to success. Something must replace visual experiences. It has been suggested that the maturational time table is based on the entire sensory system

working together with vision leading the way (Dunlea, 1989; Landau & Gleitman, 1985; Fraiberg, 1977). When vision is missing, these senses will develop, but they must find an alternate route with kinesthetic mapping in the forefront (Fraiberg, 1977).

It is suggested by the literature, that the language acquisition is similar between blind, visually impaired, and sighted children. The main difference seem to be with the meaning of the words (Dunlea, 1989; Landau & Gleitman, 1985). Without normal vision, there is a difference in the meanings of words such as "look" and "see" as the blind child relates it to themselves and others. To look at, or explore, an object means that the blind and visually impaired child must handle the object. Yet, the words "look" and "touch" are not interchangeable (Landau & Gleitman, 1985). Again in both of these studies, the experimental groups were small. In fact, in Landau and Gleitman, (1985), a number of their studies involved only one blind subject. Landau and Gleitman had been following this child's language development for many years, and they felt that she was a fair representation of the population. While this case study is interesting, care must be taken when trying to apply the findings to the general blind and visually impaired population.

To summarize, the general development of the blind and visually impaired child is not drastically different from that of the normally sighted child (Dunlea, 1989; Landau & Gleitman, 1985; Fraiberg, 1977). This is not to say that there are no significant differences, there are. But, with proper stimulation and experiences, the differences may be diminished. It is also interesting to note that as the visual acuity and/or field increase, the delays and differences will decrease (Dunlea, 1989; Landau & Gleitman, 1985; Fraiberg, 1977). Through studying the blind and visually impaired child, we can better understand the role of vision in the developmental process.

Vision also plays a large role in education. Much of the education process depends on the child being able to observe and evaluate visually the environment around them (Ashcroft & Zambone, 1980). The child who is blind or visually impaired is definitely at a disadvantage in the standard class setting. With the passage of PL 94-142, in 1975, standard classrooms must meet the needs of disabled students. Public schools must provide free and appropriate education for all handicapped students. This is a wonderful idea. If in fact, the mainstreaming project had followed the NEA guidelines, there should be few problems. Unfortunately, many teachers do not know what to do when they have a blind or visually impaired child in the classroom. Because most teachers have not had experience with a blind or visually impaired child or peer, there are many questions to ask. I believe that proper in-services and training is needed.

Residential schools for the blind and visually impaired were thought to be the answer to many of the problems in educating the blind and visually impaired. This issue, too, is surrounded with controversy. Is it better to send a young child away from the family home to a school that can better meet the needs the disability? Or, is it better to have the child stay in the family setting and attend the local private or public school with itinerant teachers to assist the child when needed? The jury is still out. Dr. Lowenfeld made his opinion know in an interview in 1990. He feels that there are not enough children to attend the smaller residential schools. He feels that there should be a central school for each state, or a school that serves a number of states, for those children who do need residential settings. For the most part, Dr. Lowenfeld felt that most blind and visually impaired children, without secondary handicapping conditions, should stay within the family home and community. I must agree with Dr Lowenfeld. From research and my own experiences, I feel that the blind and visually impaired child that has no other mental or emotional problems

should stay within the family setting. Not only will these children receive family support (hopefully), but they will also begin, from a young age, to experience life in an integrated society.

Parents are important to successful development of the blind and visually impaired children. A child can have the best of schools, mobility instruction, and be offered all the best sensory aids, but, if the parents do not support these children, the blind and visual impaired child may not reach their full potential. It is not easy for the parents of blind and visually impaired children. They must learn a new language, the language of the hands, to best meet their child's needs in the early months (Freiberg, 1977). Also, parents must mourn the loss of their "perfect" child. The mourning process may be long or short. It is hard to precisely predict reactions of the parents. Much depends on what previous experience the parents have had with blind or visually impaired persons (Eichinger, Rizzo, & Sirotnik, 1991). With support from friends and family, both parents and children can have their needs met during the beginning months.

In an article *I Can Do It With Experience, Exposure, and Enjoyment* (1984), the author talks about the importance of exploration for the blind and visually impaired child. In a world without useful or even minimal vision, visual experience is lacking. The concept of how things go together and relate to each other is difficult to understand (Bigelow, 1990; Hill, Dodson - Burk, & Smith, 1990; Pereira, 1990; Schneekloth, 1989). Only through careful and systematic exploration can haptic information be a functional alternate for vision. This article is reproduced in the appendix of this paper.

Future Research

I believe that further research needs to be pursued in the development of the blind and visually impaired children. Dr. Lowenfeld suggests that the blind and visually impaired children of today differ from those of the

1940's and 1950's (Olansky & Hatlen, 1990). Incidence of RLF are down and other factors have been introduced in recent years. Therefore, I believe that there should be another series of studies, like those in the 1977 Fraiberg report, that take a longitudinal look at the development of the blind and visually impaired child. Now we have literature to compare with and give guidance. I also would like to see an increase in the sample groups if at all possible. Most studies dealt with families that had a stable economic base. What differences are there with those families that do not have such a stable economic base? What about those families with differing ethnic backgrounds. We know that various cultures look on blindness differently. Are these cultural biases helpful or not?

While the research did answer a number of questions, there are many more still unanswered. Blindness and visual impairment had a spurt of interest in the 70's to mid 80's. Since then, attention has been focused elsewhere. I noticed that many recent reports were Japanese or Russian. It would be interesting to know what progress is being made in these cultures. A cross cultural investigation would be extremely interesting.

Final Comments

This review has only scratched the surface. The blind and visually impaired population is increasing. With technological advances, more premature infants are being saved. There is not yet an alternative to the incubation chamber, and more premature infants will develop RLF even though precautions are taken. Yet, RLF is only one of many reasons why infants are blind or visually impaired. The disabled community demands much attention. The children in these communities are succeeding. We need to know how to better meet the needs of these children. With proper educational environments and support services, I find it extremely exciting to think of what may be accomplished.

I wish to end with two thoughts. First, remember that the blind and

visually impaired persons are people first, and blind or visually impaired second. Secondly, while the body parts may not work properly, the brain may allow these children, with the right experiences, to develop into scientists, researchers, and other contributing members of society.

Appendix A

Appendix A

**Please note that the original document had reproduced two
articles in this section. These articles were:**

**Harrell, L., 1984, I Can Do It With Exposure, Experience,
Expectation, and Enjoyment, An Eric Document
and**

**Miller, D. D. , 1985, Reading Comes Naturally : A Mother and her
Blind Child's Experience , *Journal of Visual Impairment and
Blindness*, Vol. 79 (1) , January, pg. 1 - 6.**

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